

Turning to Near East literature, one finds in the great book of Job (30: 4) the old man's plaint that everybody laughs at his suffering, and even the "salt-weed" or "mallow" cutters deride him. The Palestinian Negeb or south country is volcanic and saline. Spring torrents bring down mineral salts from the hills. Water holes turn salty and crystals often line the edges. Even the Babylonian texts refer to this salt country. The nomad population adapted its resources to their needs. Every edible or therapeutic plant had to yield its benefit.

When Job mentioned the mallow cutters he used the term *malluax*. The final consonant, *xeth*, had much the same guttural sound as Greek *xi*. References to the salt lands in Psalms (107: 34) and Jeremiah (17: 6) employed the same root. In Babylonia, a *malaku* was a sailor, one identified with salty waters. In passage from the cradle of civilization to and through the Mediterranean tongues, the glottal stop, *k*, or guttural *x*, could be easily lost, leaving the softer *malva*, *malba*, and *mallow*. But the presence of the extra consonant in some of the Greek terms provides the clue pointing to oriental habitat and initial use of the mallow.

The philological background of botanical nomenclature can not be expected to provide complete implementation for habitat and dispersion studies, but there are possible suggestions. Certainly the linguist can clasp hands with the botanist when he finds basic word patterns such as *b-r-g*, *k-t-n*, or *m-l-x* stretching from Persia to the Pacific.

Willamette University, Salem, Oregon,
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NOTES ON THE FLORA OF THE CHARLESTON MOUNTAINS, CLARK COUNTY, NEVADA. IV.¹ ASTRAGALUS

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For assistance in the study of the *Astragali* of the Charleston Mountains and for affording me the use of the Pomona College Herbarium, including the Marcus E. Jones Herbarium, I wish to express thanks to Dr. Philip A. Munz. Appreciation is also extended to the curators of the herbaria of the United States National Museum, the New York Botanical Garden and the University of California for the loan of type and critical specimens. I also wish to thank Mr. Rupert C. Barneby for information about Nevada *Astragali* and for the preparation of the accompanying plate.

¹ Previous notes in this series have appeared as follows: Madroño 4: 128-130. 1937; Bull. So. Calif. Acad. Sci. 37: 1-11. 1938, 38: 1-7. 1939.

Type specimens of species herein described as new are in the Clokey Herbarium now on deposit at the University of California, Berkeley.

KEY TO THE SPECIES OF ASTRAGALUS

I. Perennials

1. *Pods 1-celled*

A. Pods sessile.

Pods leathery.

Pods horizontal, 1.5 cm. or more long; low plants, stems decumbent.

Pods strigose, tapering at base, narrowly lanceolate-linear, decidedly arcuate, 3-4.5 cm. long.

Leaflets elliptic; pubescence appressed, hairs with median attachment; flowers 2-3 cm. long

1. *A. amphioxys*

Leaflets oval to broadly obovate; pubescence loose, somewhat tangled, hairs with terminal attachment

2. *A. Tidestromii*

Pods long villous, obliquely ovoid with up-turned tips.

Corolla purple.

Pubescence of leaflets appressed; calyx tube about 10 mm. long, with nearly white hairs, teeth 2-3 mm. long; pods 1.5-2.5 cm. long

3. *A. Newberryi*

Pubescence of leaflets loosely villous; calyx tube 7-8 mm. long, with mostly black hairs, teeth 4-5 mm. long; pods 3 cm. or more long

3a. *A. Newberryi*
var. *funereus*

4. *A. coccineus*

Corolla crimson

5. *A. humistratus*
var. *sonorae*

Pods erect, about 1 cm. long; flowers 7-10 mm. long; stems slender, 3-5 dm. long

6. *A. aequalis*

Pods membranous, much inflated, speckled; sutures equally convex; leaflets lance-linear to linear

B. Pods stipitate.

Pods leathery; stipe from very short to nearly as long as calyx

7. *A. Preusii*

Pods membranous, much inflated, mottled

8. *A. artipes*

2. *Pods completely or incompletely 2-celled*

A. Pods partially 2-celled; septum narrow.

Pods stipitate, somewhat inflated.

Stipe 3-5 mm. long.

Pods leathery, erect, nearly straight; flowers white with purple tips, about 13 mm. long

9. *A. arrectus*
var. *remotus*

Pods membranous, mottled, strongly arcuate; flowers purple, 18-20 mm. long

10. *A. Beckwithii*
var. *purpureus*

Stipe very short; pods leathery, filled with pulp when green

11. *A. praelongus*

Pods sessile, leathery, slightly arcuate; flowers purplish, 8-10 mm. long

12. *A. mohavensis*

- B. Pods completely 2-celled or with the septum reaching almost to ventral suture, sessile.
 Pods papery, much inflated.
 Flowers white with purple tips; caespitose perennials, stems less than 1 dm. long; pods mottled, septum formed by protrusions from both sutures; alpine or subalpine.
 Pods 2-3 cm. long, acuminate ellipsoid 13. *A. platytropis*
 Pods about 1 cm. long, oval, with a slender beak 1-2 mm. long 14. *A. kernensis* subsp. *charlestonensis*
- Flowers purple; stems erect, more than 3 dm. high; pods about 2 cm. long, rounded ovoid, septum formed by protrusion from dorsal suture only; Larrea or lower Juniper Belt 15. *A. lentiginosus* var. *Fremontii*
- Pods coriaceous, not inflated.
 Plants 1-4 dm. high.
 Pods nearly straight.
 Pods white shaggy-woolly, 2-2.5 cm. long; flowers white with purple tips, 13-15 mm. long 16. *A. Minthorniae*
 Pods glabrous, 2.5-3 cm. long; flowers purple tinged, 7-8 mm. long 17. *A. bernardinus*
 Pods strongly arcuate and strongly reticulate, white strigose; flowers purple, 6-8 mm. long 18. *A. hemigyris*
- Plants acaulescent or subacaulescent, less than 1 dm. high.
 Leaflets 3-7, oblanceolate to obovate; calyx teeth 3-4 mm. long 19. *A. calycosus*
 Leaflets 5-13, elliptic-oblanceolate; calyx teeth 1-1.5 mm. long 20. *A. mancus*
- II. Weak, decumbent annuals; flowers 3-5 mm. long, white or purple; pods sessile
- Racemes few-flowered; pods papery, linear, 1.5-2 cm. long.
 Pods 2-celled except towards tip.
 Keel with a short, rounded porrect beak 21. *A. Nuttallianus* var. *trichocarpus*
 Keel with an acuminate, porrect beak 21a. *A. Nuttallianus* var. *acutirostris*
- Pods 1-celled, septum from dorsal suture, if present, a mere line 21b. *A. Nuttallianus* var. *imperfectus*
- Racemes dense and headlike; pods 2-celled, coriaceous, cross-wrinkled, obliquely ovoid, 3-4 mm. long 22. *A. dispermus*

1. ASTRAGALUS AMPHIOXYS Gray, Proc. Am. Acad. 13: 366. 1878. *Xylophacos amphioxys* Rydb. Bull. Torr. Bot. Club 32: 662. 1906.

Texas to southern Nevada, Arizona and northern Chihuahua. Local habitat, occasional in Larrea Belt at about 1000 meters: Cottonwood Springs, *Clokey 8496*; Wilson's ranch, *Maguire 18035*. Blooms in April.

2. *Astragalus Tidestromii* (Rydb.), comb. nov. *Xylophacos melanocalyx* Rydb. Bull. Torr. Bot. Club 52: 149. 1925; not *Astragalus melanocalyx* Boiss. Nouv. Mem. Soc. Nat. Hist. Mosc. 12: 59. 1860. *Xylophacos Tidestromii* Rydb. Bull. Torr. Bot. Club 52: 155. 1925. *Astragalus Marcusjonesii* Munz, Leaflet West. Bot. 3: 50. 1941.

Southwestern Utah, southern Nevada, northwestern Arizona and southeastern California. Local habitat, gravelly, brushy soil in Larrea and lower Juniper belts at elevations of 1100 to 1300 meters: Kyle Canyon, in flower, April 26, 1937, *Clokey* 7564; in fruit, May 20, 1937, *Clokey* 7563; Kyle Canyon Fan, *Clokey* 7995, in fruit, May 15, 1936, *Clokey* 8220; Las Vegas to Red Rocks, in flower and fruit, March 31, 1940, *Clokey* 8596; Wilson's ranch, in fruit, May 27, 1919, *Tidestrom* 9661 (type of *Xylophacos Tidestromii*).

Astragalus Tidestromii is abundant at a station 3 to 4 miles from Wilson's ranch, the type locality of *A. Tidestromii*, at the same elevation and in a similar environment. Studies in the field and herbarium show that there is considerable variation in the pubescence and in the pods. On the leaflets the pubescence varies from parallel and appressed to kinky and tangled. The hairs are always attached at the end and not in the middle as in *A. amphioxys*. The hairs on the calyx may be white, or white and black mixed. The pods vary from 3 to 4.5 centimeters in length and may be curved from a small arc to over half a semicircle. The seeds are reticulate, speckled with purple, 3.5 to 4 millimeters long by 2 to 2.5 millimeters wide. Both *A. melanocalyx* and *A. Tidestromii* were described originally from limited material. Our material has been compared with isotype specimens of *A. melanocalyx* and the type of *A. Tidestromii*. It is evident that these do not warrant even varietal distinction.

3. *ASTRAGALUS NEWBERRYI* Gray, Proc. Am. Acad. 12: 55. 1876. *Xylophacos Newberryi* Rydb. Bull. Torr. Bot. Club 32: 662. 1906.

Utah and central Nevada south to western New Mexico, Arizona and extreme eastern California. Local habitat, scattered as single plants or small groups in openings on brushy ground in upper Larrea, Juniper and lower Pinyon belts: Clark Canyon, *Clokey* 7168; Charleston Park, *Clokey* 7169; Harris Springs road, *Clokey* 7570; Kyle Canyon, *Clokey* 7569, 8404, 8405; Kyle Canyon Ranger Station, *Train* 2169; Kyle Canyon to Deer Creek, *Clokey* 7571; Lee Canyon, *Clokey* 7171; Trout Creek, *Clokey* 7170; below Wheeler Wells, *Clokey* 7167. Blooms about May 1.

3a. *ASTRAGALUS NEWBERRYI* Gray var. *funereus* (Jones) comb. nov. *A. funereus* Jones, Contr. W. Bot. 12: 11. 1908. *Xylophacos funereus* Rydb. Bull. Torr. Bot. Club 52: 367. 1925. *Astragalus Purshii* Dougl. var. *funereus* Jepson, Fl. Calif. 2: 360. 1936.

Southern Nevada and southeastern California. Local habitat, scattered and rare; openings on gravelly soil in the upper Larrea to the lower Yellow Pine belts: Kyle Canyon, *Clokey 7568*; Kyle Canyon trailer camp, *Train 1677*. Blooms about May 1.

A close relationship to *A. Newberryi* is evident from a study of the pods, and the larger size of both the flowers and pods warrants varietal standing. The pubescence of the calyx consists of both white and black hairs with either predominating.

4. *ASTRAGALUS COCCINEUS* (Parry) Brandg. *Zoe* 2: 72. 1891. *A. Purshii* Dougl. var. *coccineus* Parry, *West. Am. Sci.* 7: 10. 1890. *Xylophacos coccineus* Heller, *Muhl.* 2: 217. 1906.

Colorado and Mohave deserts of California; reported from the Charleston Mountains by Jepson (*Fl. Calif.* 359. 1936). Should be looked for on lower foothills especially on the western side of the range. Blooms in April and May.

5. *ASTRAGALUS HUMISTRATUS* Gray var. *SONORAE* (Gray) Jones, *Contr. W. Bot.* 10: 58. 1902. *A. Sonorae* Gray, *Pl. Wright.* 2: 44. 1853. *Batiophaca Sonorae* Rydb. *N. Am. Fl.* 24: 317. 1929.

New Mexico, southern Nevada, Arizona and Sonora, Mexico. Very local in the Charleston Mountains: ridge above Charleston Park at an elevation of 2330 meters, associated with *Pinus scopulorum*, *P. monophylla* and *Juniperus scopulorum*, *Clokey 8408*.

The vegetative parts of specimens from the Charleston Mountains are near the lower limits in measurements. Blooms in June.

6. *Astragalus aequalis* sp. nov. Herba perennis erecta, e basi ramosa, 3–7 dm. alta; caules striati strigosi; folia 6–12 cm. longa; stipulae liberae anguste triangulares, 2–3 mm. longae; foliola 9–15 (plerumque 11) anguste lineari-lanceolata vel linearia obtusa utrinque strigosa, 12–40 mm. longa, 2–4 mm. lata; racemi axillares, folia subtendentia excedentes; flores 6–12, 10 mm. longi, lutei; calyx strigosus, pilis albis vel nigris, tuba 4–4.5 mm. longa, dentibus subulatis vel anguste triangularibus, 1–1.5 mm. longis; vexillum obovatum, apice emarginata, 12 mm. longum, 9 mm. latum; alae quam vexillo paullo breviores, lamina oblonga, 6 mm. longa, auriculo rotundo, 1 mm. longo; carina alis aequans, lamina 5–6 mm. longa, auriculo basalari brevi instructa; legumen sessile persistens chartaceum multo inflatum uniloculatum ellipticum, 3.5–4 cm. longum, 2 cm. latum, 1–2 cm. diametro, suturis subaequaliter convexis, sutura ventrali sulcata (ca. 1 mm.), albo-pubescentis stramineum purpureo-maculatum vel purpurascens stramineo-maculatum; semina fusca, 2.5–3 mm. longa, 2 mm. lata.

Perennial, erect, branched from base, 3–7 dm. high; stems striate, strigose; leaves 6–12 cm. long; stipules free, narrowly triangular, 2–3 mm. long; leaflets 9–15 (usually 11), narrowly lance-linear to linear, obtuse, strigose on both sides, 12–40 mm. long, 2–4 mm. wide; racemes axillary, 6–12 flowered, extending

above the subtending leaves; flowers 10 mm. long, yellow; calyx tube 4–4.5 mm. long; teeth subulate to narrowly triangular, one-fourth to one-third the length of the tube, strigose with white or black hairs; banner obovate, slightly notched, 12 by 9 mm.; wings slightly shorter, blade oblong, 6 mm. long, with a rounded auricle 1 mm. long; keel as long as the wings, blade 5–6 mm. long, with a short, rounded, basal auricle; pods sessile, persistent, papery, much inflated, 1-celled, 3.5–4 cm. long, elliptical, cross-section elliptical, 2 cm. wide, 1 cm. deep to rounded, 1.5 cm. in diameter, sutures nearly equally convex, ventral suture sulcate about 1 mm., white-pubescent, straw colored speckled with purple to purplish speckled with straw color; seeds smooth, brown, 2.5–3 mm. long, 2 mm. wide.

Occurs at scattered locations in the Charleston Mountains, Clark County, Nevada: Harris Springs road, associated with *Juniperus utahensis*, elevation 1900 meters, in fruit, June 4, 1937, *Clokey 7572* (type); Kyle Canyon, with *Pinus scopulorum*, elevation 2180 meters, in flower, May 10, 1936, *Clokey 7172*; elevation 2270 meters, in fruit, July 2, 1936, *Clokey 7173*; Lee Canyon, elevation 2450 meters, June 16, 1939, *Alexander 791*; ridge north of lower Lee Canyon, elevation 2000 meters, in fruit, June 6, 1936, *Clokey 7174*; Willow Creek at 1810 meters, in fruit, June 15, 1937, *Train 1997*.

Astragalus aequalis is most closely related to *A. Douglasii* (T. & G.) Gray and *A. Douglasii* var. *Parishii* (Gray) Jones. The three can be distinguished as follows:

Pods attached to a minute boss, falling free from the calyx, dorsal suture much more convex than the nearly straight ventral suture.

Stipules 4 mm. long; leaflets 15–23, elliptic to oblong; calyx tube 3 mm. long; teeth subulate, at least half as long as the tube. West central California, coastal. *A. Douglasii*

Stipules 4–5 mm. long; leaflets 11–25, oblong to elliptic-obovate; calyx tube 4 mm. long; teeth deltoid, one fourth to one third as long as the tube. Southern California, west of the deserts *A. Douglasii*
var. *Parishii*

Pods not attached to a minute boss, falling with the calyx, ventral and dorsal sutures equally convex; stipules about 2 mm. long; leaflets 9–15 (usually 11), narrowly lance-linear to linear, 12–40 mm. long, 2–4 mm. wide; calyx tube 4–4.5 mm. long; teeth subulate, one fourth to one third as long as the tube. Charleston Mountains, Nevada *A. aequalis*

7. *ASTRAGALUS PREUSSII* Gray, Proc. Am. Acad. 6: 222. 1864.
Phaca Preussii Rydb. Bull. Torr. Bot. Club 40: 47. 1913.

Central Utah, central Arizona, southern Nevada to southeastern California. Local habitat, sandy or gravelly calcareous soil in the Larrea Belt below 1200 meters: Cottonwood Springs ranch, *Clokey 8460*; Indian Springs, *Clokey 8406*. Blooms in April.

8. *ASTRAGALUS ARTIPES* Gray, Proc. Am. Acad. 13: 370. 1878.
Phaca artipes Rydb. Bull. Torr. Bot. Club 32: 664. 1906.

Colorado to Nevada and Arizona. Local habitat, with *Pinus scopulorum* at an elevation of about 2700 meters: Lee Canyon, July 11, 1938, *Train 2141*.

9. ASTRAGALUS ARRECTUS Gray var. REMOTUS Jones, Rev. Astrag. 162. 1923. *Tium remotum* Rydb. N. Am. Fl. 24: 391. 1929.

From La Madre Mountain to Good Springs, Clark County, Nevada. Local habitat, among limestone and sandstone rocks at elevations from 1100 to 1700 meters: Cottonwood Springs, *Clokey 8407*; Excelsior Canyon, *Clokey 8713*; Mountain Springs, *Clokey 7998*; Rocky Gap Springs, *Clokey 8714*; Wilson's ranch, *Maguire 18041, 18067*. Blooms in April or May.

10. ASTRAGALUS BECKWITHII Torr. & Gray var. PURPUREUS Jones, Zoe 3: 288. 1893. *Phaca artemisiarum* Rydb. Bull. Torr. Bot. Club 40: 48. 1913. *Phaceomene artemisiarum* Rydb. N. Am. Fl. 24: 383. 1929.

Western Utah, eastern and southern Nevada. Local habitat, widely scattered in dry soil in upper Larrea, Juniper and Pinyon belts at elevations from 1800 to 2450 meters: Charleston Park, *Alexander 590*; Clark Canyon, *Clokey & Anderson 7164, 7165*; Cold Creek, *Clokey 7989, Train 1976*; Cold Creek Spring, *Clokey 7565*; Deer Creek road, *Clokey 7566*; Harris Springs road, *Clokey 8643*; Kyle Canyon trailer camp, *Train 1692*; below Wheeler Wells, *Clokey 7166*. Blooms in May.

11. ASTRAGALUS PRAELONGUS Sheldon, Minn. Bot. Stud. 1: 23. 1894. *A. Pattersoni* Gray var. *praelongus* Jones, Contr. W. Bot. 10: 65. 1902. *Jonesiella praelonga* Rydb. N. Am. Fl. 24: 404. 1929.

Southern Nevada and southwestern Utah; reported from the Charleston Mountains by Jones (Rev. Astrag. 156. 1923). Should be looked for on the lower foothills.

12. ASTRAGALUS MOHAVENSIS Wats. Proc. Am. Acad. 20: 361. 1885. *Brachyphragma mohavensis* Rydb. N. Am. Fl. 24: 400. 1929.

Mohave Desert, California and Nevada. Local habitat, scattered and scarce; gravelly soil in Juniper Belt at elevations from 1500 to 1800 meters: Harris Springs road, *Clokey 8687*; Kyle Canyon, *Clokey 7990, 7991*. Blooms in May.

13. ASTRAGALUS PLATYTROPIS Gray, Proc. Am. Acad. 6: 526. 1865. *Phaca platytropis* Rydb. Mem. N. Y. Bot. Gard. 1: 246. 1900. *Cystium platytrope* Rydb. Bull. Torr. Bot. Club 40: 50. 1913.

Rare on isolated peaks; Beaverhead County, Montana; Tooele County, Utah; Elko, White Pine and Clark counties, Nevada; Sonora Pass, California. Local habitat. Gravelly slopes at or above timberline on Charleston Peak at elevations of 3400 to 3500 meters; associated with *Pinus aristata*: Charleston Peak, *Clokey 5518, 7992, 8001*; southwest slope of Charleston Peak, *Train 2292*. Blooms in late July.

The Charleston Peak plants differ constantly from the typical form in the following characters: stipules 1.5–2 mm. long, leaflets 11–19, calyx teeth 1 mm. or less long. The illustration (plate 42) in "Revision of the North American Species of *Astragalus*" by M. E. Jones is inaccurate in showing the septum extending from the dorsal suture only. The septum is formed by protrusions from both sutures meeting in the center of the pod. The seeds are dark brown and mitten-shaped.

14. *ASTRAGALUS KERNENSIS* Jepson subsp. *charlestonensis* subsp. nov. A specie differt: foliolis 15–19, leguminibus 1 cm. longis.

Caespitose, decumbent perennial; stems 1–1.5 dm. long, slender, strigose; leaves 6 cm. or less long; stipules deltoid, 2 mm. long, strigose; petioles white strigose; leaflets 15–19, well separated, elliptical to narrowly obovate, obtuse, 4–7 mm. long, strigose on the lower face, glabrous on upper; racemes axillary, shorter than the subtending leaves, 2–6 flowered; peduncles slender, 2–3 cm. long; racemes 1 cm. or less long, the inflated pods appearing capitate; flowers white except for the purple tip to the keel, 8–10 mm. long; calyx strigose with white and black hairs; the tube about 3 mm. long; teeth 0.5–1 mm. long; banner 8–10 mm. long, 4–5 mm. wide, nearly erect, entire or minutely notched at apex; wings nearly as long as the banner, blade 5–6 mm. long, 1.5 mm. wide, with reflexed, basal auricle; keel purple tipped, about 7 mm. long; blade 3.5 mm. long, with reflexed basal auricle; pods sessile, papery, strigose, mottled, 1 cm. long, septum formed by protrusions from both sutures, reaching the tip, only the ventral suture sulcate, oval to nearly globular, obtuse at both ends, with a slender beak 1–2 mm. long; seeds about 5, mitten-shaped, 2.3 mm. long, 2 mm. wide.

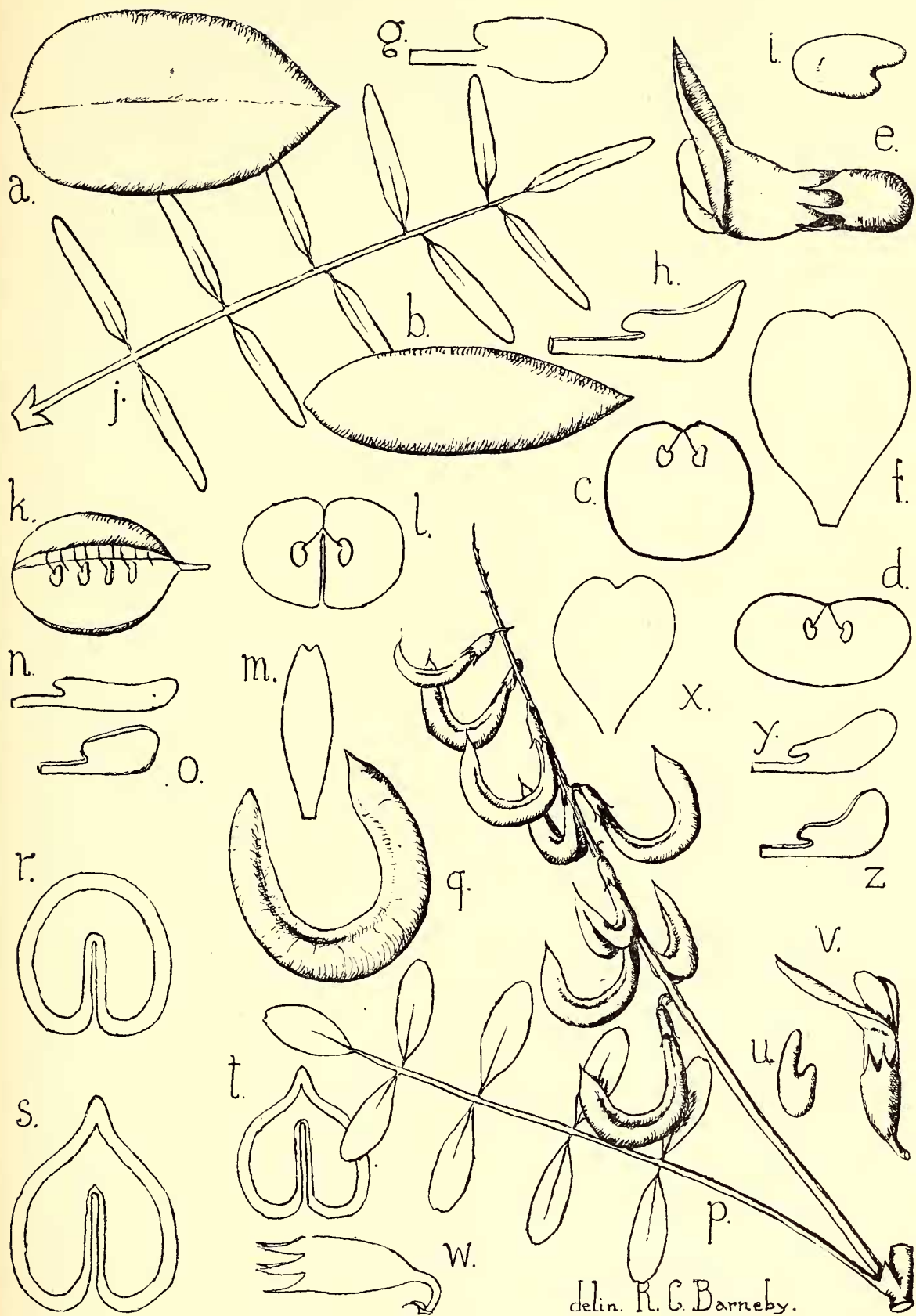
Known only from Charleston Peak. With *Pinus aristata*, elevation 3200 meters, July 29, 1937, *Clokey 7573* (type); west slope near Trout Creek, elevation 10,000 feet, June 26, 1926, *Jaeger* (Pomona).

The oval to spherical pods, obtuse at both ends with the partition, formed by protrusions from both sutures, reaching the tip, making the pods completely 2-celled, shows relation to *A. kernensis* Jepson not to *A. lentiginosus* Dougl. var. *sierrae* Jones or other forms near *A. lentiginosus*. These all have the partition formed by a septum, from the dorsal suture only, which does not reach the tip.

The subspecies may be separated from the species as follows:

Leaflets 11–15, pods 6–7 mm. long, 8000–8500 ft., Tulare County, California	<i>A. kernensis</i>
Leaflets 15–19, pods 1 cm. long, 10,000–10,500 ft., Charleston Peak, Clark County, Nevada	<i>A. kernensis</i> subsp. <i>charlestonensis</i>

15. *ASTRAGALUS LENTIGINOSUS* Dougl. var. *FREMONTII* (Gray) Wats. Bot. King Expl. 66. 1871. *A. Fremontii* Gray, in Torr.



delin. R. C. Barneby.

PLATE 27. ASTRAGALUS. Figs a-j, *Astragalus aequalis* Clokey: a, pod, dorsal view, $\times 1$; b, pod, lateral view, $\times 1$; c, d, cross sections of pods, $\times 1$; e, flower, $\times 3$; f, banner, $\times 2$; g, wing-petal, $\times 2$; h, keel, $\times 2$; i, seed, $\times 4$; j, leaf, $\times 1$. Figs. k-o, *Astragalus kernensis* Jepson var. *charlestonensis* Clokey: k, longitudinal section of pod, $\times 2$; l, transverse section of pod, $\times 2$; m, banner, $\times 2$; n, wing-petal, $\times 2$; o, keel, $\times 2$. Figs. p-z, *Astragalus hemigyris* Clokey: p, raceme and leaf, $\times 1$; q, pod, $\times 2$; r, transverse section of fresh pod, $\times 5$; s, t, cross sections of dry pods, $\times 5$; u, seed, $\times 4$; v, flower, $\times 2$; w, calyx, $\times 3$; x, banner, $\times 2$; y, wing-petal, $\times 2$; z, keel, $\times 2$.

Pacif. R. R. Rep. 4: 80. 1857. *Cystium Fremontii* Rydb. N. Am. Fl. 24: 407. 1929.

Southern Utah to the Death Valley region of California, south to Mexico. Local habitat, locally abundant in rocky, brushy ground in the upper Larrea and lower Juniper belts: Kyle Canyon, *Clokey* 7175, 7574, *Train* 1672; mouth of Pine Canyon, *Clokey* 8612; Trout Creek fan, *Clokey & Anderson* 7176; Wilson's ranch, *Maguire* 16596. Blooms about May 1.

16. *ASTRAGALUS MINTHORNIAE* (Rydb.) Jepson, Fl. Calif. 2: 374. 1936. *Hamosa Minthorniae* Rydb. Bull. Torr. Bot. Club 54: 15. 1927.

Southern Nevada to the New York Mountains, California. Local habitat, gravelly flats and slopes in the Juniper Belt at elevations from 1700 to 2200 meters: Clark Canyon, *Clokey & Anderson* 7180; Kyle Canyon, *Clokey* 7177, 7575, *Train* 1686; Mountains Springs, *Clokey* 7997; below Wheeler Wells, *Clokey* 7179. Blooms in May.

17. *ASTRAGALUS BERNARDINUS* Jones, Proc. Calif. Acad. ser. 2, 5: 661. 1895. *Hamosa bernardina* Rydb. Bull. Torr. Bot. Club 54: 19. 1927.

Mohave Desert from the San Bernardino Mountains, California; reported from the Charleston Mountains by Jones (Rev. Astrag. 258. 1923). Should be expected on the lower foothills. Blooms in early spring.

18. *Astragalus hemigyryrus* sp. nov. Herba perennis humilis frutescens argyreo-canescens; caules numerosi ramosi, 1-4 dm. alti; folia adscendentes, 5-10 cm. longa; stipulae triangulares acuminatae, 2 mm. longae; foliola 7-11, 6-15 mm. longa elliptica, apice obtuso vel retuso; pedunculi et racemi quam foliis subtendentibus paullo longiores; bracteae subulatae, 1 mm. longae; pedicelli in fructu reflexi, leguminibus horizontaliter patentibus; flores purpurei, 6-8 mm. longi; calyx strigosus, pilis albis vel nigris, tuba 3 mm. longa, dentibus subulatis, 2 mm. longis; vexillum obovatum; alae quam vexillo 1 mm. breviores, lunatae, apice rotundo, auriculo magno reflexo; carina alis aequans; legumen 2.5-3 cm. longum, 4-5 mm. latum, subsessile deciduum non inflatum valide reticulatum, uniformiter arcuatum, basi acuto, apice acuto in rostro brevi gracili attenuato, stylo curvato persistenti, biloculatum vel subbiloculatum fere ad apicem, septo crasso ex sutura dorsali extendenti, valvis immaturis crassis paullo succulentis, maturis coriaceis, sutura ventrali paullo prominenti, dorsali sulcata; semina compressa ad hilum alte emarginata, 2.5 mm. longa, 1.5 mm. lata.

Low, bushy, silvery-canescent perennial; stems numerous, branched, 1-4 dm. high; leaves ascending, 5-10 cm. long; stipules deltoid-acuminate, about 2 mm. long; leaflets 7-11, 6-15 mm. long, elliptic, obtuse or retuse; peduncles and racemes somewhat longer than the subtending leaves; bracts subulate, 1 mm. long;

flowers purple, 6–8 mm. long; calyx strigose with white and black hairs; tube 3 mm. long; teeth subulate, 2 mm. long; banner obovate; wings 1 mm. shorter than banner, lunate, rounded at tip, with a large reflexed auricle; keel the same length as the wings, rounded above to a blunt tip, with a reflexed, basal auricle; pedicels reflexed in fruit, pods horizontally spreading; pods sessile, deciduous, not inflated, strongly reticulated, uniformly arched to a half circle, acute at both ends, tapering to a short, slender beak surmounted by the curved persistent style, when green, walls thick, somewhat fleshy, cross-section circular, dry walls leathery, cross-section cordate, ventral suture somewhat raised, dorsal suture sulcate, 2-celled or almost so nearly to the tip by a thick-walled open septum from the dorsal suture, 2.5–3 cm. long, 4–5 mm. high; seeds brown, mitten-shaped, 2.5 mm. long, 1.5 mm. wide.

Growing on rock ledges south of Indian Springs in the Larrea Belt, elevation about 1250 meters, April 18, 1939, *Clokey 8409* (type); *Clokey 7996, 8593*.

Astragalus hemigyris is most closely related to *A. Layneae* Greene from which it may be separated as follows:

- | | |
|---|---------------------|
| Stipules 7–10 mm. long; leaves near base of plant; leaflets 13–23, 1–1.5 cm. long; flowers white with purple tip, 15–20 mm. long; calyx 5–7 mm. long; pod 3–5 cm. long, 6–7 mm. wide, pilose-canescens with somewhat curly hairs, curvature of pod most pronounced near tip | <i>A. Layneae</i> |
| Stipules 2 mm. long; leaves throughout length of stem; leaflets 7–11, 6–15 mm. long; flowers purple, 6–8 mm. long; calyx tube 3 mm. long, pods 2.5–3 cm. long, 4–5 mm. wide, strigose with short appressed hairs, curved nearly uniformly throughout | <i>A. hemigyris</i> |

Jones (Rev. Astrag. 261. 1923) reports *A. albens* from Indian Springs, Charleston Mountains. No specimens to substantiate this record are in the Jones Herbarium at Pomona College or in the National Herbarium where many of Jones' first sets are deposited. *Astragalus albens* is a local species of the San Bernardino Mountains of California. Rydberg (Bull. Torrey Bot. Club 54: 22. 1927) calls attention to Jones' description of the pods of *A. albens* "arched mostly to a circle, . . . when mature coriaceous, strongly corrugated, 2–3 cm. long, 3 mm. wide and high, flat for about 1 mm. high along the ventral suture and forming a thick wing, etc.' In the type number the pod is only 1.5 cm. long, forming an arch of about one fourth of a circle, neither coriaceous nor corrugated." The type specimen and other collections from and near the type locality fit the original description. Jones' description of the pods of *A. albens* would serve for the pods of *A. hemigyris*. It is believed that there is no justification for including *A. albens* in the flora of the Charleston Mountains.

19. ASTRAGALUS CALYCOSUS Torr. in Wats. Bot. King Expl. 66. 1871. *Hamosa calycosa* Rydb. Bull. Torr. Bot. Club 40: 50. 1913.

Western Wyoming and Idaho south to southern Nevada and eastern California. Local habitat, slopes in Juniper Belt at elevations of 2000 to 2200 meters: ridge along lower Lee Canyon, *Clokey & Bean 7589, Clokey 8002*; below Wheeler Wells, *Clokey 7163*. Blooms in June.

20. *ASTRAGALUS MANCUS* (Rydb.) Wheeler, *Rhodora* 40: 136. 1938. *Hamosa manca* Rydb. *Bull. Torr. Bot. Club* 54: 17. 1927.

Northeastern to southern Nevada. Local habitat, slopes and hilltops from timberline with *Pinus aristata* at elevations of 3300 meters to 2600 meters with *Pinus scopulorum*: Charleston Peak, *Clokey 5516*; ridge south of Deer Creek, *Clokey 8635*; between Kyle Canyon and Deer Creek, *Clokey 8000, Alexander 792b*; Lee Canyon, *LaRivers & Hancock 514, Clokey 7999, 8681, Train 2073, Alexander 792a*. Blooms in late June or July.

21. *ASTRAGALUS NUTTALLIANUS* DC. var. *TRICHOCARPUS* Torr. & Gray, *Fl. N. Am.* 1: 334. 1838. *Hamosa austrina* Small, *Fl. Southeast. U. S.* 618, 1332. 1902.

Colorado to southern California south to Texas and Lower California. Local habitat, rocky ground in the Larrea and lower Pinyon belts at elevations below 1700 meters: Mountain Springs, *Clokey & Anderson 7985*. Blooms about May 1.

21a. *ASTRAGALUS NUTTALLIANUS* DC. var. *ACUTIROSTRIS* (Wats.) Jepson, *Fl. Calif.* 2: 379. 1936. *Astragalus acutirostris* Wats. *Proc. Am. Acad.* 20: 360. 1885. *Hamosa acutirostris* Rydb. *Bull. Torr. Bot. Club* 54: 331. 1927.

West central Nevada to the Sierra Nevada, south to the Colorado Desert, California. Reported from the Charleston Mountains by Jones (*Rev. Astrag.* 271. 1923). Should be looked for on the lower foothills in the early spring.

21b. *ASTRAGALUS NUTTALLIANUS* DC. var. *IMPERFECTUS* (Rydb.) Barneby, *Leafl. West. Bot.* 3: 109. 1942. *Hamosa imperfecta* Rydb. *Bull. Torr. Bot. Club* 54: 329. 1927.

Nevada, Arizona and Lower California. Local habitat, dry, rocky soil in the Larrea Belt: ridge east of Wilson's ranch, elevation 1320 meters, *Clokey 8712*. Blooms about May 1.

22. *ASTRAGALUS DISPERMUS* Gray, *Proc. Am. Acad.* 13. 365. 1878. *Hesperastragalus dispermus* Heller, *Muhl.* 1: 137. 1906. *Astragalus didymocarpus* Hook. & Arn. var. *dispermus* Jepson, *Fl. Calif.* 2: 376. 1936.

Western Arizona, southern Nevada and California south to Lower California. Reported from the Charleston Mountains by Jones (*Rev. Astrag.* 285. 1923). Should be expected at the lower elevations. Blooms in March or April.

South Pasadena, California,
January 19, 1942.